International Conference on Integrated Water Resources Management

Management of Water in a Changing World: Lessons Learnt and Innovative Perspectives

12-13 October 2011
Dresden, Germany

SPONSORED BY THE
Federal Ministry of Education and Research

Keynote Presentation

Global Environmental Change and Integral Water Resource Management: Lessons Learnt from a Mexican Perspective

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Abstract

Water is vital for humans, productive processes and ecosystems. Water resources in Mexico are threatened by scarcity, pollution, floods, climate change, and deficient water management. Water consumption has doubled in two decades, leading to water stress in dry seasons and in semi-arid and arid regions. Water stress is rising due to physical and economic pressure. This intervention explores the complex interaction between anthropogenic drivers, impacts of and policy responses to climate change (CC), their interrelationship with the dominant productive system of globalization and the effects on human health, production processes and livelihood. This analysis relates natural, financial, political and socio-cultural aspects to water security (WS). Then, it explores the availability of surface and groundwater in Mexico and its multi-institutional management. Finally, it reviews the critical situation for WS in the Metropolitan Valley of Mexico City (MVMC). Water scarcity, degradation and pollution are worsened through the lack of governance among stakeholders and at the three levels of government, however also by the impact of CC.

WS is not understood in a narrow military sense, but linked to human, gender and environmental security, a HUGE security. Thus the reference object is not the state, but humans, production, urbanization and its impact on ecosystems, where polluted and insufficient water affects soil and food, further triggered by climate change impacts. Thus the value at risks is no longer territorial integrity, but the survival of the most vulnerable, equity, and the sustainability of a community, a country or a region, while the sources of threats are illnesses, natural hazards (droughts, floods, extreme weather, and sea level rise), loss of livelihood, famine, migration, violence, conflicts and eventually war for water resources. Competing water use in agriculture, industry, and for domestic consumption requires savings, decontamination processes, and desalination to satisfy growing demands. Water quality affects health and ecosystems. This creates both conflicts and cooperation that may be enhanced by policy, institution building, and social organization.

In a future scenario of severe CC impact, humankind, international society and the business community, as well as the community of states and the international organizations will have to face many challenges to their well-being and survival, which may be more severe than any security threat that states have experienced in the past. In this situation, a widened understanding of WS may grant protection from scarcity, pollution, unequal access to basic supply, diseases and unhealthy lifestyles. To consolidate this integral WS in a world threatened by CC, the positive interrelations among natural, economic, political and socio-cultural capitals may produce safe food, clean water, private and public health facilities for everybody, permanently improved by research and innovation, where conflicts are negotiated through hydrodiplomacy.